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ABSTRACT

Retention and attrition after the freshman year among disadvantaged students at a senior college of the City University of New York were studied. A conceptual model of Tinto (1975) was applied to a group of students participating in the Search for Education, Elevation, and Knowledge (SEEK) program, which provided remedial and/or developmental instruction in reading, writing, and/or mathematics, as well as supplementary stipends, academic and personal counseling, and tutoring. The sample was approximately 49 percent Black, 38 percent Hispanic, and 13 percent other (White, Asian, Caribbean, and Latin American). Attention was directed to student characteristics and family background, educational background, student goals, academic and social integration, and persistance/withdrawal. The results indicate that Tinto's model was sensitive to the dimensions of student-institutional fit operating in the situation, while showing that academic integration was the most salient aspect of development for this group of students. In particular, the receipt of unofficial withdrawal grades in individual classes, which reflects psychological disengagement in addition to academic difficulty, showed an ability to identify students for whom attrition is an immediate possibility. (Author/SW)

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Application of A Conceptual Model of College Withdrawal to Disadvantaged Students

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Abstract

This paper reports a study of retention and attrition after the freshman year among disadvantaged students at an urban, primarily non-residential, university. Economically and academically disadvantaged college students are widely known to be at risk for attrition, which highlights the need to investigate the process among members of this group. Substantial progress has been made developing and testing explanatory models of college student withdrawal, but they have only begun to be directly applied to special groups of students such as the disadvantaged. The study applies a conceptual model developed by Tinto (1975) to a group of students participating in the Search for Education, Elevation, and Knowledge (SEEK) Program at a senior college within The City University of New York.

The paper exposits the study methodology, tests the predictive validity of major constructs in the model, and investigates a small number of selected individual variables in detail. The results indicated that Tinto's model was sensitive to the dimensions of student-institutional fit operating in the situation, while showing that academic integration was the most salient aspect of development for this group of students. In particular, the receipt of unofficial withdrawal grades in individual classes, which reflects psychological disengagement in addition to academic difficulty, showed an ability to identify students for whom attrition is an immediate possibility.

Application of A Conceptual Model of College Withdrawal to Disadvantaged Students

When formulating his conceptual model of college withdrawal, Tinto (1975) suggested that future research should examine questions of dropout among individuals of different racial backgrounds, as well as dropout from urban institutions of higher education. Assessing the advances and limitations of his approach after nearly a decade had passed, Tinto (1982) pointed out that dropout among disadvantaged students still had not been adequately addressed.

Tinto's model provides a powerful conceptual base for studying college student attrition. The major proposition of the model, that persistence/withdrawal behavior is influenced by student-institutional fit, has generally been confirmed in empirical tests. The major factors influential upon persistence/ withdrawal appear to have adequate generalizability, along with a component that is specific to the situation, institution, or to the group of students studied. When applied in different settings, the specific aspects of person-environment fit can be reflected in somewhat varying constellations of relationships.

Tinto originally thought in terms of the socialization process that occurs in residential institutions. However, the interplay of factors influencing student persistence in college may be considerably different in other types of settings not originally addressed by Tinto's thinking.

The residential institution clearly constitutes a much more encapsulating environment than the commuter setting. Student spend much less time on campus and have fewer opportunities for

contact with peers and faculty, who are the individuals with whom the primary interactions in the socialization process occur. Therefore it is not surprising that a small but growing body of research has begun to uncover patterns of influence that overlap incompletely with those found in residential ones. Pascarella and his colleagues (Pascarella, Duby, Miller, & Rasher, 1981; Pascarella & Chapman, 1983; Pascarella, Duby, & Iverson, 1983) tested the model in the urban commuter institution, and found that integrative factors appeared to play less of a role than in residential settings, relative to the importance of student background factors. The reduced opportunities for interaction with the institution's major agents of socialization appeared to increase the relative importance of individual backgrounds.

Given the apparent importance of background factors for urban commuter students, it seems especially important to develop explanations of attrition for urban students with disadvantaged backgrounds. It is not sufficient to state that the disadvantaged appear to be at risk, for if this group is to be well served, more attention will have to be focused on identification of factors influential on attrition within groups of disadvantaged students.

A study examining retention using a sample mixing students with advantaged and disadvantaged backgrounds might confirm that disadvantagement contributes to attrition. Such a study would not be useful because, aside from confirming the obvious, its results would imply an undesirable alteration of the selection process for educational opportunity programs, i.e., to admit students with better predicted chances to succeed. Society has commited itself to provide special support to disadvantaged students through such

programs. It even might be said that the mission of a college in admitting disadvantaged or underprepared students is to negate the predictions generated by the traditional regression equations, which if taken literally, might result in decreased educational opportunity for those who apply to college with less advantaged backgrounds.

It would be more useful to examine the socialization process in higher education using a framework suitable to explain why, despite entering with similarly disadvantaged backgrounds, some students persist and others do not.

The vast amount of work relative to student attrition pertains to general college populations. Studies modeling the process for minority, black, or disadvantaged students have only begun to appear, such as that of Bennett and Bean (1983). They studied a group of black students who were relatively isolated within a predominantly majority campus and environs, and emphasized such constructs as alienation and race relations.

The context within which a given minority or disadvantaged group attends college clearly influences the demands placed upon the socialization process. The developmental tasks facing such students differ between residential universities where they may be isolated and relatively few in number, and urban commuter settings where minority or disadvantaged students are common and may even predominate.

Constructs concerning alienation and race relations did not appear to be as crucial in this setting because of the cosmopolitan nature of the students studied, the college and the city of its location. Furthermore, the large group of approximately 1800

students in the program constituted an available reference group for its participants, even if differences might have impaired identification between them and students who had been regularly admitted to the college.

The present study involved an urban population, selected upon criteria of economic and educational disadvantage, within a commuter university with a highly diverse student body. The sample was comprised of students with approximately 49% black, 38% hispanic, and 13% "other" ethnic backgrounds. The category labeled "other" contained numerous subgroups, the most predominant of which were white, Asian, Caribbean, and Latin American.

The decision was made that it would be advantageous to examine the best available literature addressing the problem in general before adopting an idiosyncratic model for this specific group of students. Rather than discarding a large body of work incorporating the developments of several decades of attention to college student attrition, this study takes the approach of first testing a model that has been useful among traditional student groups. That is, it tests the hypothesis that the constructs in the model applicable to traditional groups are useful for explaining the experience of non-traditional groups, only perhaps with some alterations in the patterns of path coefficients or regression weights. These specific manifestations of model parameters would reflect the particular dimensions of student-institutional fit in this situation. If the constructs provided inadequate explanation, the investigator would then be prepared to consider alternative or additional constructs pertinent to specific student groups.

This approach also grew from the desire to contribute to a body

of work that is growing across settings, using the same general model. As it is implemented in varying settings and with disparate groups, patterns of relationships across studies should become discernible. An understanding of how the model generalizes across institutions and student groups undoubtedly would be useful.

The specific purpose of this study was to discover what must be done to apply an established conceptual model of college withdrawal to disadvantaged students at an urban commuter institution. Tinto's (1975) model was chosen because of its clarity and parsimony, as well as the availability of proven instruments developed by Pascarella, et al. to measure its constructs. Further, the results obtained across a series of studies by Pascarella, et al. and others provide important referents for interpretation of the results obtained.

Method

The research to be described here was based in a senior college within the City University of New York (CUNY), an urban commuter institution. The group in focus was that participating in the Search for Education, Elevation, and Knowledge (SEEK) Program. This program had been established within the senior colleges of CUNY in the late 1960's to provide higher educational opportunity to disadvantaged youths whose high school performance would otherwise preclude admission to a four-year college. Having served primarily minority students, this program had an enrollment of approximately 1800 at the college investigated. The majority of SEEK students had required remedial and/or developmental instruction in reading, writing, and/or mathematics. In addition to this instruction, SEEK students had been given supplementary stipends, academic and personal counseling, and tutoring.

The study was conducted in two phases, with a total of three different samples of students participating.

Pilot Study to Test Instrumentation

Two pilot data collections were conducted among continuing SEEK students who had registered for remedial and/or developmental classes. Corresponding samples of 130 and 412 students drawn during the Summer and Fall of 1983, respectively, participated. Both groups of students responded to Pascarella and Terenzini's (1980) institutional integration scales. The data analysis for the pilot test examined the five factorially derived subscales to estimate their reliability and discriminant validity in this specific situation.

As the item analysis of the first set of data revealed a

suspected reading comprehension problem, several items were revised, necessitating a second data collection to confirm the psychometric properties of the revised scales.

Study to Estimate Parameters of the Conceptual Model

The main study focused on a third sample representing the group of freshman students entering the program in September 1983. Survey instruments providing data on backgrounds and expectations for college were received from 435 students at the time of their initial registration, which constituted 74.8% of this class. Records of these students' interactions with the institution and academic progress were accumulated over the 1983-84 academic year. Follow-up survey reports of their experiences while enrolled in college were collected during the Spring of 1984.

In September of 1984, it was determined who registered for their second year of college and who did not, and the study compared their characteristics and experiences.

Model and Variable Selection

Variable selection was guided by a desire to initially apply previous work with Tinto's model to this special subgroup, and sufficient variables were specified to parallel that work. These are variables representing family background, individual attributes, pre-college schooling experiences, initial (Fall 1983) and subsequent (Spring 1984) commitments to the institution and to the goal of college graduation, academic and social integration, intent to withdraw, and attrition/retention (defined as registration for the second year of college in Fall 1984). The variables as operationally defined in the study are described below.

Family background characteristics. Parental education was given

as the average of mother's and father's education (1=grammar school or less, to 8=graduate or professional degree).

Parental income, which has also been used to represent this category by Pascarella et al., was not used. First, this was due to unvailability of private institutional records. Second, it was not included in the survey instruments because it was seen to be a sensitive issue within the program, and its inclusion might inhibit student responses to other items. Students are selected for participation and receive stipends based on their confidential financial statements, and the desire not to arouse defensiveness on the part of respondents superceded the data requirement.

Financial circumstances, including the reflection of parental financial support for college, were represented by two items, the number of hours per week the student planned to be employed during the semester, and the stated concern about the ability to finance college (1=none, to 3=major concern).

Individual attributes. Information concerning sex and ethnic background were collected, but are not considered in the analyses reported below. The proportions of males and females (74.7% female; 25.3% male) was in approximate accord with those of students in the program in general. A dummy variable was coded to represent sex (1=male, 2=female). The possibility of estimating separate regression equations for males and females was not investigated because of the limitations imposed by the small size of the subgroups, especially the males.

Of the 424 students who reported their ethnic identifications, the largest subgroups were black and hispanic, with 208 and 159 members respectively (49.1% and 37.5%). Unfortunately, the number of

students with complete sets of data available (including completion of the Spring followup questionnaire) was approximately half the number who completed the initial questionnaire. The resultant subgroup sizes were judged to be too small for reliable investigation within the individual groups. To make the most of the available information, a dummy variable was formed to represent the two most prevalent ethnic groups, blacks (1) and hispanics (2). Together, these two groups accounted for 86.6% of all study participants.

Precollege schooling. Academic background was measured by two variables. One was the academic average obtained in secondary school school, and the other was the sum of scores obtained on the CUNY Freshman Skills Assessment Tests. [All composite variables in the study that were defined as the sum of several variables having different metrics were calculated by first standardizing the individual variables and then averaging the standardized scores across all pertinent variables for which information was available. This was based on a procedure outlined by Pascarella and Terenzini (1980).] The Skills Assessment Tests were administered immediately prior to entry to college and addressed three basic skill areas: mathematics, reading, and writing. The secondary school and entering skill information was obtained from institutional records. All other background information was obtained from questionnaires completed at the time of initial registration.

Initial goal and institutional commitments. The two constructs were assessed using measures constructed by summing applicable responses obtained from the entry survey instrument.

Initial goal commitment was the sum of two items:

1. "How important is it for you to get a bachelor's degree?" (1=extremely unimportant. to 5=extremely important)
2. Highest degree expected (1=none, to 4=graduate degree).

Initial institutional commitment was the sum of three items:

1. "How important is it for you to graduate from this college, as opposed to some other college?" (1=extremely unimportant, to 5=extremely important)
2. "How certain are you that this college was the right choice for you?" (1=very uncertain, to 5=very certain)
3. "Is this college your first choice (scored as 3), second choice (2), or less than second choice (1)?"

Academic integration. This was operationally defined as the sum of the following eight scales or variables:

Information pertaining to the variables relating to grade and course performance was obtained from institutional records:

1. Freshman year cumulative grade-point average.
2. Proportion of remedial/developmental courses passed. This item was included because most students were taking remedial or developmental courses, which carry no college credit and therefore are not reflected in the grade-point average. Many students had no credit bearing courses during the Fall semester aside from a single-credit freshman orientation course that is mandatory for entering program participants. Indeed, it is possible for a student to be registered only for remedial courses, fail all of them, and still obtain a 4.0 GPA if he or she received an "A" in the orientation class. This variable correlated .36 with GPA.

3. Number of unofficial withdrawal grades. Students who stop attending a class during the course of the semester receive this grade, recorded as "WU," which if not corrected or otherwise rectified, eventually turns into an "F." This item was included in the study because of its theoretical significance. It might be argued that such a grade represents a sign of risk for attrition because it is given when a student has stepped outside of the rules of the institution. At minimum, it reveals a failure of the student to master the institutional maze, and may show a flaw in the socialization process, perhaps even showing a step towards disengagement. In some ways it might be preferential for a student to receive an "F," because it would reflect only an academic failure of a student who has lived within the rules, as opposed to the implications of not coping with or stopping outside of regular institutional behaviors. This variable correlated -.62 with GPA. Because higher numbers of these grades denote less academic integration, the standardized scores were multiplied by -1 before summation. In the instances where a student received "WU" grades in all classes, this measure was not included in calculation of academic integration or in any correlational analyses.

Three measures developed by Pascarella and Terenzini (1980) and modified in pilot testing were obtained from the Spring followup questionnaires:

4. Student's perceived level of intellectual development. This was measured by a seven-item Likert-type scale with

a final sample reliability of .77. (All reliabilities reported are coefficient alpha.)

5. Student's perception of faculty concern for quality classroom teaching and student development. This was measured by a five-item Likert-type scale with a final sample reliability of .76.
6. Frequency of freshman year non-class contacts with faculty for academic advising, to discuss intellectual or course related matters, or to discuss career plans. The natural logarithms of the items constituting this variable were used, following a procedure described by Pascarella and Terenzini (1980).

Two measures of objective interactions between the student and the institution drew upon records kept by SEEK Program functionaries, which were later abstracted and compiled.

7. Number of freshman year contacts with departmental counselors for academic reasons. Each student is assigned to one of the counselors, who only serve students in the Program. They are required to visit at least once a semester. Each time a student visited a counselor, he or she signed an attendance sheet, and the counselor entered the reason for the visit or described the services rendered. Contacts for social reasons were separated out and considered under the rubric of social integration, as described below.
8. Number of hours tutored in the freshman year. The Program maintains a large tutoring service for students in remedial/developmental and beginning college level

courses, which keeps detailed records of student attendance. The records show each hour of tutoring completed, and for which course or reason the tutoring applied. The measure used in the study combined all tutoring received, plus other subject matter workshops (such as a series of grammar workshops) regardless of the particular subject, into one summary number for each student.

Social Integration. This was operationally defined as the sum of the following four variables, after they had been standardized:

Three measures developed by Pascarella and Terenzini (1980) and modified in pilot testing were obtained from the Spring followup questionnaires:

1. Extent and quality of a student's relationships with student peers at the institution. This was measured by a six-item Likert-type scale with a final sample reliability of .85.
2. The quality and impact of a student's informal, non-classroom interactions with faculty. Measured by a five-item Likert-type scale with a final sample reliability of .82.
3. Frequency of freshman year non-class contacts with faculty for help with a personal problem, to discuss a campus problem or issue, or to socialize informally. The natural logarithms of the constituent items were used.

One additional measure was drawn from records kept by SEEK Program functionaries:

4. Number of freshman year contacts with departmental

counselors for social or personal reasons. This was taken from the records kept by individual counselors, which was the same source for contacts with counselors for academic reasons. The notation of each visit was generally accompanied by a reason for the contact or a description of the services rendered. Only contacts for social or personal reasons were considered here. Contacts for academic reasons were considered under the rubric of academic integration, which is described above.

Subsequent goal and institutional commitments. These were assessed using measures calculated by summing applicable responses obtained from the Spring followup survey instrument.

Subsequent goal commitment was the sum of two items:

1. "How important is it for you to graduate from college?" (1=extremely unimportant, to 5=extremely important)
2. "What is the chance that you will graduate from college?" (1=none, to 4=very good)

Subsequent institutional commitment was the sum of two items:

1. "I am confident that I made the right decision in choosing to attend this college" (1=strongly disagree, to 5=strongly agree).
2. What is the chance that you will be enrolled in this college one year from today?" (1=none, to 4=very good)

Intention to persist or withdraw. This was measured by a seven-item Likert-type scale derived from the work of Pascarella et al. (1981), and Bean (1983), with a final sample reliability of .75. The measure was scored so that high scores indicated intention to persist and the expected correlation with retention would be

positive. All items were drawn from the Spring followup questionnaires:

Three of these items asked the student to assess the chance of a given instance occurring, and required responses of "none" (scored as 4), to "very good" (scored as 1). These instances were:

1. Drop out temporarily.
2. Drop out permanently.
3. Transfer to another college before graduating.

The other four items requested students to state the extent to which they had engaged in given activities. The response options were "not at all" (scored as 5), to "to a very great extent" (scored as 1). The activities were:

4. Thought about leaving this college.
5. Discussed leaving school with friends.
6. Discussed leaving school with parents.
7. Discussed leaving school with people there.

Persistence/withdrawal. This was dummy coded as "1" for persisters and "0" for withdrawers. All withdrawals were considered as voluntary. Some students in the sample were dismissed for academic reasons, but an appeal process exists wherein a faculty committee considers reinstatement upon request of the student. Reinstatement is dependent upon the circumstances, but after only one year, the chances for success of the appeal are excellent. Therefore, if a student was dropped for academic reasons and did not appeal for and receive reinstatement, the departure at that point in time was considered a voluntary withdrawal.

In order to transfer to another school and maintain eligibility for a similar program in that college (SEEK in the other CUNY

four-year colleges, College Discovery in the CUNY two-year colleges, or another Higher Education Opportunity Program), students must first receive approval from the Director of the SEEK Program at the college currently attended. Eight students who applied for such authorization and did not register for their second year at the original college were considered as transfers and were excluded from the multivariate analyses. All other withdrawers who transferred were unaccountable and represented a potential source of error in the study.

Statistical Analysis

Pilot test. The data analysis examined the five factorially derived subscales drawn from the work of Pascarella and Terenzini (1980), to estimate their reliability and discriminant validity in this specific situation.

Distributions of responses to all items and item-subscale correlations were obtained, and coefficient alpha and the average interitem correlation for each subscale were calculated. To study further the internal consistency, two approaches were employed: (a) the average interitem correlation within each subscale was contrasted with the average correlation of items within a given scale with items in each of the other subscales, and (b) the number of items correlating more highly with their hypothesized subscale of membership (corrected for autocorrelation) than with any other subscale was contrasted with the number of items correlating more highly with a scale other than that of its intended membership. Finally, the scale intercorrelations were examined, in conjunction with their reliabilities, to estimate discriminant validity.

An the item analyses of the first set of data revealed a

suspected reading comprehension problem, several items were revised for the subsequent data collection.

Study to estimate model parameters. Two approaches, based on the methods used by Pascarella and his associates (cf. Pascarella, Duby, and Iverson; 1983) were used to investigate the data. The first used hierarchical regression using all available pairs of data to determine the increase in explained variance in persistence/withdrawal associated with the five major sets of variables in Tinto's model. The sets of variables were entered in the order of their hypothesized causal sequence: background characteristics, initial goal and institutional commitments, academic and social integration, subsequent goal and institutional commitments, and intention to persist or withdraw. Eight structural equations were solved: each variable was regressed, in turn, on all the causally antecedent variables in the model. Since many of the aggregate variables were formed as combinations of standardized original variables, and were already out of their natural metrics, the raw regression weights were not very meaningful and were omitted from the paper. Therefore, only standardized regression weights are reported.

Secondly, path analysis was employed to test the validity of the causal model. An initial set of regressions was run to determine the significant paths ($p < .05$). The non-significant paths were then eliminated and a final round of regressions was conducted including only those variables that had initially significant path coefficients. This procedure yielded a "reduced" path model, in the same manner as Pascarella, Duby, and Iverson (1983), and other previous work by Pascarella et al.

Results

Pilot Test

Item revisions. It is not surprising, when studying underprepared students using an instrument designed for a regular college population, that reading comprehension problems might occur, as was apparently the case in the first data collection. Some words in the original scales appeared to be miscomprehended. For example, items containing the word, "interactions," showed inconsistent item-subscale correlations. When the word was replaced by "contacts" for the second data collection, this difficulty appeared solved. More serious was a tendency of students to respond inappropriately to negatively worded items. Almost all of these items (when scored in a reversed manner) showed item-subscale correlations that were similar in magnitude to the general levels within the subscales, only with negative signs. Although this outcome might have been indicative of a halo effect, it more plausibly could have suggested that students were not picking up the meaning of the negative wording, which required them to respond negatively to indicate a positive attitude. Follow-up conversations with several respondents confirmed that the problem was one of comprehension. Eliminating negative wording from some of the items might subject the scales to bias from halo effects but, because the elimination of so many negative statements would emasculate the instrument, the negative items were reworded. The performance of these items appeared improved in the second data collection, although the apparently more consistent patterns of correlations might have been due in part to the larger sample size. In all, 14 out of 30 original items needed to be revised because of one or both of these difficulties.

Internal consistency. Table 1 shows the statistics calculated to reflect internal consistency for both sets of data collected. The alpha coefficients were generally higher for the second set of data (ranging from .72 to .80) than for the first (varying from .62 to .72). This improvement might be traced to the revision of items that were found to be troublesome in the first data collection. Items with negative item-subscale correlations were eliminated when calculating alpha coefficients for the first data set. There were no negative item-subscale correlations in the second data set.

In every case the average within-subscale item correlations were higher than the average item correlations across scales. For the first data set, the medians of these averages were .28 within, .15 across; for the second data collection, .40 within, .24 across.

In both data collections the vast majority of items had their highest correlations with their own subscale (22 and 26 out of 29 items, respectively).

In summary, all three approaches to internal consistency yielded similar interpretations. The level was judged generally acceptable, and was improved in the second data collection. This outcome tends to support the proposition that the scales have discriminant validity for this group of students.

Scale intercorrelations. The intercorrelations among the scales ranged from .14 to .55 for the first data collection; from .33 to .68 for the second, as revealed in Table 2. When considered in relation to their reliability coefficients, these coefficients would not appear to be alarmingly high. None of the correlations approached the magnitude of the scale reliabilities. When corrected for attenuation, the highest intercorrelation was .86. The higher

correlations for the second test appear to mirror the increased reliabilities, and tend to imply consistent relationships among the underlying subdomains tapped by the instrument. All this information would suggest that the subscales tap discrete yet interrelated aspects of institutional integration.

Study To Estimate Model Parameters

The results of the hierarchical regression analysis are summarized in Table 3. The table shows that the model explained 31 percent of the variance in persistence/withdrawal behavior as defined in the study. Of the five sets of predictors (background characteristics, initial institutional and goal commitments, academic and social integration, subsequent institutional and goal commitments, and intention to persist or withdraw), only two; academic and social integration, and intention provided statistically significant increments in the squared multiple correlation.

Table 3 also presents a comparison between the results obtained and those reported by Pascarella, Duby, and Iverson (1983) using substantially the same variables in a four-year urban commuter university. The Pascarella et al. study explained 28 percent of the variance, as opposed to the present 31 percent. Examination of the statistical significance of the increments in R-square provided by the various groups of predictors shows that, while the magnitudes of the increments differ, both studies obtained significant increments when academic and social integration, and intention were added to the equation. The studies diverge in that the previous one obtained significance when background characteristics were entered, while in the present study background did not account for a significant

proportion of the variance in persistence/ withdrawal behavior. This result might have been expected, since the mandated selection rules for the SEEK Program result in a relatively homogeneous group of students (all of whom have disadvantaged backgrounds).

Table 4 presents the final regression equation (with all the predictors included), as well as parallel results reported by Pascarella et al. (1983). The equations conform in that academic and social integration and intention were statistically significant, and differ in that no background variables were significant in the current study, while Pascarella et al. found significant predictions resulted from sex (with women more likely to persist) and aptitude.

The path diagram (Figure 1) reflects a summary of the significant regression results for each of the endogenous variables in the model, as only the paths that were significant beyond the .05 level are shown. Both initial institutional and goal commitments were related to parents' education. Students in the SEEK Program in general and in the study sample in specific, are primarily first-generation college students. Only 24.3 percent of the mothers and 21.8 of the fathers whose education was reported had some postsecondary education. Of those reported, 9.0 percent of the mothers and 10.4 percent of the fathers held at least a college degree. Parental education impacted upon initial commitment to the college and to the goal of graduation, but once the process of higher education had begun, this influence was overshadowed by integrative forces, and parental education had no other significant correlations with other subsequent variables in the model.

Institutional commitment was also significantly related to sex (with females likely to be more committed to the college), and to

aptitude (in the negative direction), with those with lower aptitudes likely to be more committed to the college. The college where this research was done has been historically exclusively female, and has been admitting men only for a few decades. It still retains a student population that is roughly two-thirds female, which is primarily the result of self-selection. Therefore it is not surprising that, at least upon entry, females might identify more completely with the institution. That those students with lower aptitude scores were more committed to the college might be a result of a perception on the part of lower scoring students that the college they have been admitted to is their only alternative, or at least that they would have greater difficulty being accepted for admission by another university.

The only antecedent variable that influenced academic integration was aptitude. The sign of the relationship was negative, implying that those with lower basic skills assessment scores were likely to have greater academic integration as measured in the study. The negative relationship of aptitude to academic integration may be the result of a phenomenon that is reflected in two ways. The first of these is that students with higher entering aptitude scores are placed into more difficult remedial/ developmental courses than those with lower scores, and these courses historically have been associated with lower passing rates. This would be reflected in a lower proportion of remedial courses passed. Further, the better-scoring students are more likely to be taking college level courses, which are more difficult than remedial/ developmental ones, and this difficulty would be reflected in lower grade-point averages. Additionally, students in fewer remedial courses are

likely to receive fewer hours of tutoring (which was also included in the academic integration measure). Students who did not take any remedial or developmental courses did not have a proportion of remedial courses or hours tutored included in the calculation of academic integration, which, like all the other aggregate variables in the analysis, was the average of standardized scores for each available applicable variable.

Social integration was not significantly related to any antecedent variables. The variable with the lowest p value for predicting social integration was initial institutional commitment ($p = .13$). This would be consistent with hypotheses generated by the model (Pascarella, Duby, & Iverson; 1983). In practice, however, it has been difficult to predict social integration using these variables. For instance, Pascarella et al. (1983) found that social integration was significantly influenced only by whether a student had intended to complete an applied (versus liberal arts) major. This variable was not included in the present analysis (although it was asked) because the overwhelming proportion of respondents indicated that they were undecided or uncertain about their choice of major, as might be expected of underprepared freshmen who are facing a sequence of remedial/ developmental courses before being allowed to take courses in the college at large.

Subsequent commitments to the specific institution and to the goal of college graduation were both predictable from their corresponding initial levels. Additionally, subsequent goal commitment was influenced by academic integration, and subsequent institutional commitment was influenced by the levels of academic and social integration. This latter result is in constrast to the

results of Pascarella et al. (1983), who found that commitment to the institution at the end of the freshman year in the non-residential setting they studied to be defined largely by successful and personally satisfying interactions with the academic rather than the social systems of the institution. In the present case, subsequent commitment to the institution was a function of the extent and quality of a student's relationships with the both the academic and social systems of the institution.

Persistence/withdrawal behavior was directly related to three variables: academic and social integration, and intention. Academic integration appeared to have the greatest direct influence, a result that might have been expected from a group of underprepared students. Within the range of developmental tasks that shape the transition from high school to college, academic adjustment must be considered paramount, expecially for students who were not very academically successful in high school. (Recall that students are selected for the SEEK Program by criteria of academic as well as economic disadvantage. The mean reported high school average, for those for whom the information was available, was 74.0.) Therefore it is not surprising that this adjustment takes precedence over the other types of development, such as social integration.

Examination of the measures constituting the aggregate measure of academic integration revealed that freshman year grade-point index (r=.37), proportion of remedial courses passed (r=.29), number of unofficial class withdrawals (r=-.48), number of contacts with counselors for academic reasons (r=.12), and total number of hours tutored (r=.18) were correlated with persistence.

A particularly interesting indicator of impending attrition

within this domain was the notation of unofficial class withdrawals (which were recorded as "WU" grades). This indicator carried special theoretical significance because it represents a failure in the socialization process in addition to unsatisfactory academic progress. Receiving such grades results from the failure of the student to develop appropriate behaviors for coping with the academic system, beyond the simple failure to master course material or basic skills. Opting for "WU" rather than facing failing grades might be an important step in the process of disengagement from the institution for many eventual dropouts. Additionally, this variable might provide a simple, easily obtainable marker with which to flag students who are not becoming integrated into the academic and social systems of the university.

Table 5 shows the clear relationship between obtaining these grades and eventual attrition. Students who did not take any "WU" grades had considerably higher retention rates than those who did. This relationship was consistent whether a single semester or the entire year was examined. Those with no "WU's" for the entire year persisted at a rate greater than 85 percent. Those with one "WU" for the year persisted at a rate that was slightly greater than 70 percent. The rate for students with 2 "WU's" for the year was close to 25 percent. (The figures for students with greater than 2 "WU's" must be interpreted cautiously because many students in this category actually withdrew completely from school during the course of a semester. To describe dropout as predictive of dropout would be tautological.)

For individual semesters, the relationship is even more pronounced. The retention rates for those with no "WU's" in a single

semester were greater than 80 percent, while the rates for those with one "WU" were only near the 50 percent level, and the rate for those with 2 "WU's" in a semester were slightly greater than 15 percent for Fall grades, and 35 percent for Spring grades. It is interesting to note that if a student took a single "WU" in the Fall or Spring, but not in both, his or her chances for retention were reduced, but not nearly as greatly as the chances of those who took multiple "WU's." These students clearly constitute a high risk subgroup.

One potential use of these results would be to engender creation of a system using "WU" grades to identify students in immediate danger of dropping out. Such a system would have to be useful over and above the presence of an established mechanism of placing students with low grade-point averages on academic probation. To investigate the utility of this proposal, variables were created representing whether or not students would be placed on the established system of academic probation and/or on a proposed system of "WU-Alert." In the college, a student is placed on academic probation if his or her grade-point average falls below 1.50 if 12 or fewer college credits have been earned, or below 1.75 if 13 or more credits have been earned. Based on the above findings, the "WU-Alert" flag was added for any student with a cumulative total of 2 or more "WU" grades.

Analysis revealed that these two groups overlapped considerably. Of the 94 students on academic probation, 44 were also on "WU-Alert." Of the 48 students on "WU-Alert," 44 were on academic probation. However, the utility of the "WU-Alert" system was shown in the retention rates of these groups (Table 6). The retention rates for

subgroups of those students on academic probation separated widely when "WU-Alert" status was considered, and were in proportion to the rates across varying numbers of "WU's" for students not on probation. Those who would have been on academic probation but not on "WU-Alert" persisted at a rate of 74.0 percent, while those on both academic probation and "WU-Alert" persisted at a rate of only 22.7 percent. The receipt of a single "WU" grade during the freshman year did not seem so significant. Among those on academic probation, those who received no "WU's" persisted at a rate of 80.0 percent, while those who received one "WU" persisted at a rate of 65.0 percent. It is possible for a student to receive a single "WU" through administrative error, or by slipping in a single course, but the pattern of receiving multiple "WU's" appears to reflect a serious problem in adjusting to the demands of college, at least at this institution.

Although the aggregate variable used in the study to represent social integration had a non-significant simple correlation with persistence, it had a beta weight that was significant in the negative direction. At first glance, this appeared to be an artifact of the regression, due to multicollinearity among the predictors (for example, academic and social integration correlated .51 with one another). However, it mirrors the negative influence found for social integration upon persistence by Pascarella et al. (1983), and therefore warrants further investigation. It might be possible that this result was also an artifact, but in the former study social integration had a significant negative simple correlation with persistence.

Another possible explanation for the negative beta weight is

that students for whom social interaction is highly important do not obtain sufficient opportunities for that type of exchange and are likely to seek it a other, perhaps residential colleges. Perhaps this might be a reflection of a compensatory relationship in that those who concentrate on academics during the freshman year and who are more likely to remain in school, do so at the expense of social contacts.

The model emphasizes the importance of informal student/faculty interactions, but this was not evidenced in the simple correlations. Examination of the measures that constituted social integration yielded only a single significant correlation. That was for the factorially derived measure of extent and quality of peer relationships (r=.13). None of the measures related to social interactions with instructors or counselors were significantly related to persistence.

Subsequent institutional commitment was not directly related to persistence, but did exert an indirect influence through its effect upon intention, which itself was the second most powerful predictor of retention. This adds additional confirmation to the notion that the effects of freshman year experiences upon persistence are mediated by intention.

Discussion

The study found that Tinto's model was sensitive to the constellation of relationships characterizing student-institutional fit in this setting. The model provided provide clear prescriptions for data to be collected, and aided interpretation of the results within the framework of a cohesive theoretical explanation of the student disengagement process.

The particular nature of the sample was of economic and educational disadvantage. The data suggest that the dimensions of academic disadvantage are considerably more serious in relation to retention chances, at least directly. Academic integration, and several of its constituent measures, were clearly the most important correlates of freshman year retention.

One possible explanation of the weak results for the background variables, in addition to the sample homogeneity, would be that the model might not adequately characterize the press of financial disadvantage upon college freshmen, as was observed by Tinto (1982). Alternatively, the financial aid given to SEEK Program participants might minimize the variable impact of these conditions upon individual students, relative to one another.

Social integration was overshadowed in usefulness by the academic variables. Social contacts appear secondary when major adjustments to academic dilemmas are being faced. The negative regression coefficient for social integration might be disregarded as a suppressor effect resulting from multicollinearity, due to the nonsignificant simple correlation between social integration and persistence and the single significant relationship between the individual measures constituting social integration and persistence. This would have been even more likely since previous results using similar methods in different settings (i.e., residential universities) have shown a positive influence of social integration upon persistence. However, the current results replicate a negative beta weight found for social integration by Pascarella, Duby and Iverson (1983) in a non-residential institution (though not with a group of disadvantaged students). They hypothesized that the

relationship was a valid manifestation of person-environment fit and probably resulted from the interaction between student needs for social interaction and the limited ability of urban institutions to offer commuting students sufficient opportunities for social engagement. Nevertheless, we may simply be seeing replication of the multicollinearity from Pascarella et al. (1983).

One way in which the results of the study potentially can be applied to retention programs might be in the specification of data for the identification of students for whom attrition is an immediate risk. This could serve as a first step in the provision of intervention programs to head off the possibility. Two indicators have particular potential in this regard. The first is the receipt of unofficial withdrawal grades in individual classes and the second is intention to withdraw or consideration of withdrawal reported in the second semester of the freshman year.

In the case of unofficial class withdrawal grades, it seems apparent that students are becoming disengaged from the college when they opt for these grades, particularly when they take more than one of them. Although the college already has a system of academic probation and the SEEK Program has mechanisms to support students with unacceptable grade-point averages, the variables excerpted from the study can serve as "flags" for identifying students who have begun psychological withdrawal in addition to experiencing academic difficulty. In particular, the results show that students who would be identified by the college's regular system of academic probation (for those with low grade-point averages) but not identified by a system based on flagging unofficial class withdrawal grades, persisted at rates that were comparable to those of the entire

sample. However, those who were on probation but were also identified by this new flagging system persisted at extremely low rates. Specially designed programs might be initiated to prevent this subgroup of especially high risk freshmen from eventually dropping out.

The single institution, single year sample limits the generalizability of the results, and restricted the ability to analyze reliably several mediating factors, particularly sex and ethnic group membership. Another potentially limiting factor was the inability to accurately confirm whether those students who did not persist actually transferred to another college, and whether or not they will eventually return to this or to another institution. A further limiting effect was the mix of influences between the situations where academic dismissal and inadequate followup to appeal the dismissal resulted in discontinuance, versus the situation where the withdrawal was more clearly voluntary. As this work continues, an effort will be made to untangle these effects, as well as to investigate the academic paths of these students as their educational careers progress over additional years.

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Table 1

Internal Consistency Estimates of Institutional Integration Scales

Scale	Pilot I (N=130)			Pilot II (N=412)		
	Scale alpha	Average inter-item r	Average r with outside items	Scale alpha	Average inter-item r	Average r with outside items
Peer group interactions	.66	.28	.11	.76	.40	.27
Interactions with faculty	.66	.28	.15	.79	.45	.24
Faculty concern for student development and teaching	.62	.25	.15	.80	.46	.19
Academic and intellectual development	.72	.30	.18	.77	.34	.21
Institutional and goal commitments	.62	.21	.12	.72	.33	.27

Table 2

Intercorrelations of Institutional Integration Scales
Pilot Tests

Scale	1	2	3	4	5
1. Peer group interactions	--	.25*	.38*	.34*	.16
2. Interactions with faculty	.48*	--	.47*	.55*	.18
3. Faculty concern for student development and teaching	.47*	.68*	--	.52*	.14
4. Academic and intellectual development	.42*	.55*	.56*	--	.35*
5. Institutional and goal commitments	.33*	.42*	.47*	.52*	--

Note. Correlations for Pilot I (N=130) appear above the diagonal.
Correlations for Pilot II (N=412) appear below the diagonal.

*p<.01

Table 3

Comparison of Multiple Regressions with Pascarella, et al. (1983)

		Present Study		Pascarella et al.(1983)	
Step	Variable Set Added	RSQ	RSQ Increase	RSQ	RSQ Increase
1	Background Characteristics	.014	.014	.099*	.099*
2	Initial Institutional and Goal Commitments	.024	.010	.111*	.012
3	Academic and Social Integration	.267*	.243*	.174*	.063*
4	Subsequent Institutional and Goal Commitments	.285*	.018	.190*	.016
5	Intention to persist/ withdraw	.305*	.020*	.282*	.092*

*p < .05

Table 4

Comparison of Correlations and Standardized Regression (Beta) Coefficients with Pascarella et al. (1983)

	Present Study		Pascarella et al (1983)	
Variable	Zero Order r	Beta	Zero Order r	Beta
Secondary School Grades (a)	-.01	-.04	.07	-.13
Sex (M = 1, F = 2)	.08	.05	.24	.26**
Race (b)	-.09	-.06	-.03	-.05
Aptitude (c)	.003	.08	.14	.23**
Parents' Education	.04	-.03	-.004	-.02
Financial Support (d)	-.01	-.01	-.04	-.05
Part-time Work (e)	-.01	-.01	-.04	-.01
Initial Goal Commitment	.11	.10	-.05	-.06
Initial Institutional Commitment	.08	-.02	.12	.06
Academic Integration	.48	.56**	.19	.25**
Social Integration	.06	-.28**	-.09	-.25**
Subsequent Goal Commitment	.002	-.13	.08	.06
Subsequent Institutional Commitment	.18	-02	.14	-.04
Intention	.26	.18*	.35	.34**
RSQ		.305**		.282**

*p < .05 **p < .01

(Continued...)

Table 4 (Cont.)

Note. Four variables were measured substantially differently in Pascarella et al. (1983) and the present studies. The alternative measures where differences exist are described below:

	Present Study	Pascarella et al (1983)
(a)	High school academic average	High school percentile rank in class
(b)	Black = 1, Hispanic = 2	White = 1, Non-White = 0
(c)	CUNY Freshman Skills Assessment	ACT
(d)	Concern about finances	Parental financial support
(e)	Hours expected to work	Likelihood of need for a part-time job

Table 5

Relationship Between Unofficial Class Withdrawals and Persistence

Number of Unofficial Class Withdrawals	Percent of Students Persisting Next Fall		
	Fall Grades	Spring Grades	Total for Freshman Year
0	80.2	85.3	86.9
1	46.2	58.5	71.9
2	16.7	36.4	26.7
3	10.0	26.7	40.0
4 or more	0.0	10.0	5.6

Note. This table indicates the percentages of students taking the corresponding number of unofficial withdrawal grades for the semester or year indicated who registered in the college for the following Fall semester.

Table 6

Relationships Between Unofficial Class Withdrawals, Academic Probation, and Persistence

Number of Unofficial Class Withdrawals	Percent of Students Persisting Next Fall	
	Students on Academic Probation	Students not on Academic Probation
0	80.0	87.1
1	65.0	74.4
2	26.7	25.0
All Students	50.0	84.8

Note. This table indicates the percentages of students taking the corresponding number of unofficial withdrawal grades for the freshman year who registered in the college for the following Fall semester.

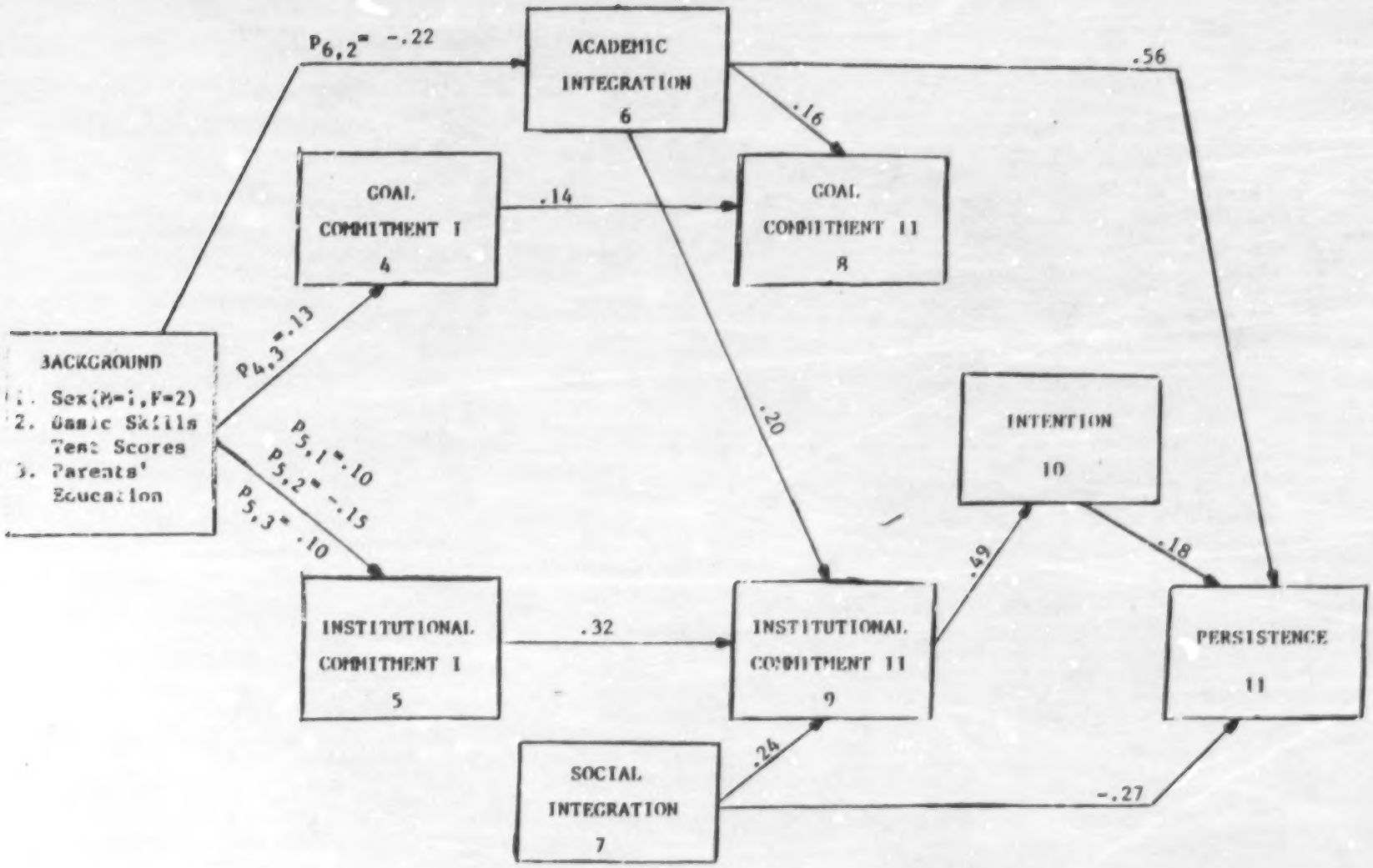

Figure 1. Reduced Path Model of College Withdrawal

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